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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
AHN, SAM K	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Best Available Copy

Office Action Summary	Application No.	Applicant(s)
	10/817,542	TRACHEWSKY ET AL.
	Examiner	Art Unit
	Sam K. Ahn	2611

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-9* is/are allowed.

6)☒ Claim(s) *10,11,19-21 and 29* is/are rejected.

7)☒ Claim(s) *12-18 and 22-28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicants' argument, see p.16, filed 07/17/07, with respect to Priority have been fully considered and are persuasive. The statement that the application fails to provide adequate support for the Priority has been withdrawn.
2. Applicants' argument, see p.17, filed 07/17/07, with respect to 112, 2nd paragraph have been fully considered and are persuasive. The 112, 2nd paragraph rejection of claims 20 to 29 has been withdrawn. However, the examiner maintains the prior art references, which were filed earlier than the instant application's priority date of 01/15/04.
3. Applicants' argument, see p.21, filed 07/17/07, with respect to 103(a) rejection of claims 1-91 have been fully considered and are persuasive. The rejection of claims 1-9 has been withdrawn. Prior art does not teach the claimed limitations as explained on pages 21 to 23 of the argument.
4. Applicant's arguments filed 07/17/07 have been fully considered but they are not persuasive.

   a. On page 18, applicants assert that Maltsev fails to teach the step of "performing a periodic pattern detection on the down converted baseband signal to produce a normalized detected periodic signal" recited in claim 10. The examiner disagrees.

   As explained in the previous office action, Maltsev teaches performing a pattern detection (106 in Fig.1 further shown in Fig.2) on the down converted

baseband signal to produce a normalized detected signal (output of 202). And although the detection of the signal is of a pattern of a training sequence (note paragraph 0021), Maltsev does not explicitly teach wherein the training sequence is a periodic signal. Vanderperren teaches a training sequence, wherein the training sequence is a periodic signal (note paragraph 0007). Hence, both Maltsev and Vanderperren teaches reception of a training sequence for further processing, wherein Vanderperren teaches that the training sequence is a periodic training sequence in order to be further used for coarse frequency estimation (note paragraph 0007). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Vanderperren in the system of Maltsev of having the training sequence as a periodic signal for the purpose of further implementing the training sequence for coarse frequency estimation (note paragraph 0007).

As explained above, Maltsev in view of Vanderperren teach the claimed limitation, which the applicants asserts prior art does not teach. Contrary to applicants interpretation that the Office Action stated that the Maltsev reference fails to explicitly teach a periodic signal, the examiner relies on the teaching of Vanderperren for this limitation, again as explained above. Therefore, the argument is not persuasive, and thus maintains the rejection.

b. On page 18, applicants raise a second assertion that Maltsev reference does not teach the step of "comparing the normalized detected periodic signal with

a set of threshold". The applicants summarize the configuration of elements 202,206,210 and 212 in figure 2 and assert that the examiner's interpretation of the comparing step to the teaching in figure 2 is incorrect. The examiner disagrees.

Maltsev teaches comparing the normalized detected signal (output of 206 coupled to each of the element 210 in Fig.2) with a set of threshold (set of thresholds 212 in Fig.2).

And although Maltsev teaches the comparing step, does not explicitly teach wherein the comparing step if of the normalized detected periodic signal, while Maltsev does teach the training sequence is a periodic signal.

Vanderperren teaches a training sequence, wherein the training sequence is a periodic signal (note paragraph 0007). Hence, both Maltsev and Vanderperren teaches reception of a training sequence for further processing, wherein Vanderperren teaches that the training sequence is a periodic training sequence in order to be further used for coarse frequency estimation (note paragraph 0007). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Vanderperren in the system of Maltsev of having the training sequence as a periodic signal for the purpose of further implementing the training sequence for coarse frequency estimation (note paragraph 0007).

Thus, the examiner explains that one skilled in the art would recognize that Maltsev in view of Vanderperren teach that the input of 204 in Fig.2 is a

periodic signal, thus the output of 206 coupled to 210 provides normalized detected periodic signal.

The applicants explain that Maltsev teaches wherein the non-coherent summators 210 do not preserve the magnitude and phase. The examiner agrees with the applicants' finding. The examiner interprets normalizing as a way of simplifying a signal or a value, in this case, normalizing such that the output of 210 does not preserve magnitude and phase. The applicants also assert that Maltsev teaches away from the claimed limitation because the matched filters 206 has a different coefficient spectrum for different subchannels. The examiner disagrees. The output of one of 206 is provided to its corresponding elements of 210 and is compared at the corresponding threshold device 212. The claim recites "comparing the normalized detected periodic signal with a set of thresholds". Maltsev does teach comparing by the element 212 the normalized detected periodic signal, output of one of element 210 with a set of thresholds, one of the threshold device 212 in the set of thresholds (the four threshold devices). Therefore, Maltsev teaches the claimed limitation, and thus maintains the rejection.

On page 19, applicants assert that the Maltsev does not teach the limitation of "when the normalized detected signal compares favorably with the set of thresholds, indicating that the down converted baseband signal is valid" because Maltsev teaches away from comparing a normalized detected periodic signal with a set of thresholds, thus cannot teach the limitation. The

examiner disagrees. Again, as explained above, Maltsev teaches comparing the normalized detected signal (output of 206 coupled to each of the element 210 in Fig.2) with a set of threshold (set of thresholds 212 in Fig.2). And although Maltsev teaches the comparing step, does not explicitly teach wherein the comparing step if of the normalized detected periodic signal, while Maltsev does teach the training sequence is a periodic signal. Vanderperren teaches a training sequence, wherein the training sequence is a periodic signal (note paragraph 0007). Hence, both Maltsev and Vanderperren teaches reception of a training sequence for further processing, wherein Vanderperren teaches that the training sequence is a periodic training sequence in order to be further used for coarse frequency estimation (note paragraph 0007). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Vanderperren in the system of Maltsev of having the training sequence as a periodic signal for the purpose of further implementing the training sequence for coarse frequency estimation (note paragraph 0007). Thus, the examiner explains that one skilled in the art would recognize that Maltsev in view of Vanderperren teach that the input of 204 in Fig.2 is a periodic signal, thus the output of 206 coupled to 210 provides normalized detected periodic signal. Maltsev does indeed teach the limitation of comparing, and further teaches the limitation of when the normalized detected signal compares favorably with the set of thresholds, indicating that the down converted baseband signal is

valid (output 208, note paragraph 0022, indicating which subchannels in the baseband signal is valid or active). Therefore, the examiner maintains the rejection.

c. In the second paragraph on page 19, applicants state that Vanderperren fails to teach the limitations recited in claim 10. However, as explained above, Maltsev in view of Vanderperren teach the claimed limitations.

d. Applicants assert that claims 11 and 19 add further patentable matter to claim 10, and thus are patentable without further explaining how the claims are further patentable.

Regarding claim 11, Maltsev '060 in view of Vanderperren teaches all subject matter claimed, as applied to claim 10, however, does not further teach performing a normalized auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal; and when the normalized auto-correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid.

Maltsev '560 teaches a short training symbol processing element (see Fig 3) performing a normalized auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal (output of 306 by auto correlation); and when the normalized auto-correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid (output of 306 is compared with a threshold to determine correlations above the predetermined threshold, note

paragraph 0028, hence are valid signals when above the threshold). Both Maltsev '060 and Maltsev '560 teach training symbol processing circuitry for processing baseband signals wherein Maltsev '560 further teaches performing auto-correlation in order to detect OFDM packet (note paragraph 0028). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of auto correlation element 302 of Maltsev '560 in the short training symbol processing circuitry 106 in Fig.1 of Maltsev '060 for the purpose of performing auto-correlation in order to detect OFDM packet (note paragraph 0028).

Regarding claim 19, Maltsev '060 in view of Vanderperren teaches all subject matter claimed, as applied to claim 10 of performing periodic pattern detection on a short training sequence of the down converted baseband signal (as previously explained), however, does not further teach performing an auto-correlation on a short training sequence of the down converted baseband signal.

Maltsev '560 teaches a short training symbol processing element (see Fig.3) performing a auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal (output of 306 by auto correlation); and when the normalized auto-correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid (output of 306 is compared with a threshold to determine correlations above the predetermined threshold, note

paragraph 0028, hence are valid signals when above the threshold). Both Maltsev '060 and Maltsev '560 teach training symbol processing circuitry for processing baseband signals wherein Maltsev '560 further teaches performing auto-correlation in order to detect OFDM packet (note paragraph 0028). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of auto correlation element 302 of Maltsev '560 in the short training symbol processing circuitry 106 in Fig.1 of Maltsev '060 for the purpose of performing auto-correlation in order to detect OFDM packet (note paragraph 0028).

Therefore, the argument is not persuasive and the examiner maintains the rejection.

e. On pages 19 and 20 of the argument, the applicants assert that Maltsev '060 does not the claim limitations recited in claim 20. First of all, applicants assert that Maltsev fails to teach the step of "performing a periodic pattern detection on the down converted baseband signal to produce a normalized detected periodic signal". The examiner disagrees.

As explained in the previous office action, Maltsev teaches performing a pattern detection (106 in Fig.1 further shown in Fig.2) on the down converted baseband signal to produce a normalized detected signal (output of 202). And although the detection of the signal is of a pattern of a training sequence (note paragraph 0021), Maltsev does not explicitly teach wherein the training sequence is a periodic signal. Vanderperren teaches a training sequence,

wherein the training sequence is a periodic signal (note paragraph 0007). Hence, both Maltsev and Vanderperren teaches reception of a training sequence for further processing, wherein Vanderperren teaches that the training sequence is a periodic training sequence in order to be further used for coarse frequency estimation (note paragraph 0007). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Vanderperren in the system of Maltsev of having the training sequence as a periodic signal for the purpose of further implementing the training sequence for coarse frequency estimation (note paragraph 0007).

As explained above, Maltsev in view of Vanderperren teach the claimed limitation, which the applicants asserts prior art does not teach. Contrary to applicants interpretation that the Office Action stated that the Maltsev reference fails to explicitly teach a periodic signal, the examiner relies on the teaching of Vanderperren for this limitation, again as explained above. Therefore, the argument is not persuasive, and thus maintains the rejection.

f. On page 20, applicants raise a second assertion that Maltsev reference does not teach the step of "comparing the normalized detected periodic signal with a set of threshold". The applicants summarize the configuration of elements 202,206,210 and 212 in figure 2 and assert that the examiner's interpretation of the comparing step to the teaching in figure 2 is incorrect. The examiner disagrees.

Maltsev teaches comparing the normalized detected signal (output of 206 coupled to each of the element 210 in Fig.2) with a set of threshold (set of thresholds 212 in Fig.2).

And although Maltsev teaches the comparing step, does not explicitly teach wherein the comparing step if of the normalized detected periodic signal, while Maltsev does teach the training sequence is a periodic signal.

Vanderperren teaches a training sequence, wherein the training sequence is a periodic signal (note paragraph 0007). Hence, both Maltsev and Vanderperren teaches reception of a training sequence for further processing, wherein Vanderperren teaches that the training sequence is a periodic training sequence in order to be further used for coarse frequency estimation (note paragraph 0007). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Vanderperren in the system of Maltsev of having the training sequence as a periodic signal for the purpose of further implementing the training sequence for coarse frequency estimation (note paragraph 0007).

Thus, the examiner explains that one skilled in the art would recognize that Maltsev in view of Vanderperren teach that the input of 204 in Fig.2 is a periodic signal, thus the output of 206 coupled to 210 provides normalized detected periodic signal.

The applicants explain that Maltsev teaches wherein the non-coherent summators 210 do not preserve the magnitude and phase. The examiner

agrees with the applicants' finding. The examiner interprets normalizing as a way of simplifying a signal or a value, in this case, normalizing such that the output of 210 does not preserve magnitude and phase. The applicants also assert that Maltsev teaches away from the claimed limitation because the matched filters 206 has a different coefficient spectrum for different subchannels. The examiner disagrees. The output of one of 206 is provided to its corresponding elements of 210 and is compared at the corresponding threshold device 212. The claim recites "comparing the normalized detected periodic signal with a set of thresholds". Maltsev does teach comparing by the element 212 the normalized detected periodic signal, output of one of element 210 with a set of thresholds, one of the threshold device 212 in the set of thresholds (the four threshold devices). Therefore, Maltsev teaches the claimed limitation, and thus maintains the rejection.

g. On page 20, applicants assert that the Maltsev does not teach the limitation of "when the normalized detected signal compares favorably with the set of thresholds, indicating that the down converted baseband signal is valid" because Maltsev teaches away from comparing a normalized detected periodic signal with a set of thresholds, thus cannot teach the limitation. The examiner disagrees. Again, as explained above, Maltsev teaches comparing the normalized detected signal (output of 206 coupled to each of the element 210 in Fig.2) with a set of threshold (set of thresholds 212 in Fig.2).

And although Maltsev teaches the comparing step, does not explicitly teach wherein the comparing step if of the normalized detected periodic signal, while Maltsev does teach the training sequence is a periodic signal. Vanderperren teaches a training sequence, wherein the training sequence is a periodic signal (note paragraph 0007). Hence, both Maltsev and Vanderperren teaches reception of a training sequence for further processing, wherein Vanderperren teaches that the training sequence is a periodic training sequence in order to be further used for coarse frequency estimation (note paragraph 0007). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Vanderperren in the system of Maltsev of having the training sequence as a periodic signal for the purpose of further implementing the training sequence for coarse frequency estimation (note paragraph 0007). Thus, the examiner explains that one skilled in the art would recognize that Maltsev in view of Vanderperren teach that the input of 204 in Fig.2 is a periodic signal, thus the output of 206 coupled to 210 provides normalized detected periodic signal. Maltsev does indeed teach the limitation of comparing, and further teaches the limitation of when the normalized detected signal compares favorably with the set of thresholds, indicating that the down converted baseband signal is valid (output 208, note paragraph 0022, indicating which subchannels in the baseband signal is valid or active). Therefore, the examiner maintains the rejection.

h. In the last paragraph on page 20, applicants state that Vanderperren fails to teach the limitations recited in claim 20. However, as explained above, Maltsev in view of Vanderperren teach the claimed limitations.

i. In the first paragraph on page 21, applicants assert that claims 21 and 29 add further patentable matter to claim 20, and thus are patentable without further explaining how the claims are further patentable.

Regarding claim 21, Maltsev '060 in view of Vanderperren teaches all subject matter claimed, as applied to claim 10, however, does not further teach performing a normalized auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal; and when the normalized auto-correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid. Maltsev '560 teaches a short training symbol processing element (see Fig.3) performing a normalized auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal (output of 306 by auto correlation); and when the normalized auto-correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid (output of 306 is compared with a threshold to determine correlations above the predetermined threshold, note paragraph 0028, hence are valid signals when above the threshold). Both Maltsev '060 and Maltsev '560 teach training symbol processing circuitry for processing baseband signals wherein Maltsev '560 further teaches

performing auto-correlation in order to detect OFDM packet (note paragraph 0028). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of auto correlation element 302 of Maltsev '560 in the short training symbol processing circuitry 106 in Fig.1 of Maltsev '060 for the purpose of performing auto-correlation in order to detect OFDM packet (note paragraph 0028).

Regarding claim 29, Maltsev '060 in view of Vanderperren teaches all subject matter claimed, as applied to claim 10 of performing periodic pattern detection on a short training sequence of the down converted baseband signal (as previously explained), however, does not further teach performing an auto-correlation on a short training sequence of the down converted baseband signal.

Maltsev '560 teaches a short training symbol processing element (see Fig.3) performing a auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal (output of 306 by auto correlation); and when the normalized auto-correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid (output of 306 is compared with a threshold to determine correlations above the predetermined threshold, note paragraph 0028, hence are valid signals when above the threshold). Both Maltsev '060 and Maltsev '560 teach training symbol processing circuitry for processing baseband signals wherein Maltsev '560 further teaches

performing auto-correlation in order to detect OFDM packet (note paragraph 0028). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of auto correlation element 302 of Maltsev '560 in the short training symbol processing circuitry 106 in Fig.1 of Maltsev '060 for the purpose of performing auto-correlation in order to detect OFDM packet (note paragraph 0028).

Therefore, as explained above, prior art teaches the limitations recited in claims 10,11,19-21 and 29.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maltsev et al. US 2005/0123060 A1 (Maltsev) in view of Vanderperren et al. US 2004/0076246 A1 (Vanderperren).

Regarding claim 10, Maltsev teaches a method for accurate signal detection in a wireless environment (see Figs.1 and 2), the method comprises: receiving a radio frequency (RF) signal (114 to 102 in Fig.1); converting the RF signal into a down converted baseband signal (102, wherein one skilled in the art would recognize that the receiver such as 102 includes a downconverter to provide a

down converted baseband signal, note US 2004/0190560 A1, and see 202 including 220 providing a down converted baseband signal output of 220);

performing a pattern detection (106 in Fig.1 further shown in Fig.2) on the down converted baseband signal to produce a normalized detected signal (output of 202);

comparing the normalized detected signal (output of 206 coupled to each of the element 210 in Fig.2) with a set of threshold (set of thresholds 212 in Fig.2); and when the normalized detected signal compares favorably with the set of thresholds, indicating that the down converted baseband signal is valid (output 208, note paragraph 0022, indicating which subchannels in the baseband signal is valid or active).

And although the detection of the signal is of a pattern of a training sequence (note paragraph 0021), Maltsev does not explicitly teach wherein the training sequence is a periodic signal.

Vanderperren teaches a training sequence, wherein the training sequence is a periodic signal (note paragraph 0007). Hence, both Maltsev and Vanderperren teaches reception of a training sequence for further processing, wherein Vanderperren teaches that the training sequence is a periodic training sequence in order to be further used for coarse frequency estimation (note paragraph 0007). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Vanderperren in the system of Maltsev of having the training sequence as a periodic signal for the

purpose of further implementing the training sequence for coarse frequency estimation (note paragraph 0007).

Regarding claim 20, the claim is rejected as applied to claim 10 with similar scope. The further limitation of a transmitter section operably coupled to convert outbound baseband data into outbound radio frequency signals, Maltsev teaches (note paragraph 0017) wherein element 100 in Fig.1 also performs transmitting RF communications, hence one skilled in the art would recognize that baseband signals from baseband data are upconverted into RF signals to be transmitted through antenna 114. Furthermore, another element such as 100 in Fig.1 intended to be receiving the transmitted RF signals would be receiving as explained in regards to claim 10.

6. Claims 11,19,21 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maltsev et al. US 2005/0123060 A1 (Maltsev '060) in view of Vanderperren et al. US 2004/0076246 A1 (Vanderperren) and Maltsev et al. US 2004/0190560 A1 (Maltsev '560).

Regarding claim 11, Maltsev '060 in view of Vanderperren teaches all subject matter claimed, as applied to claim 10, however, does not further teach performing a normalized auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal; and when the normalized auto-

correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid.

Maltsev '560 teaches a short training symbol processing element (see Fig.3) performing a normalized auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal (output of 306 by auto correlation); and when the normalized auto-correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid (output of 306 is compared with a threshold to determine correlations above the predetermined threshold, note paragraph 0028, hence are valid signals when above the threshold). Both Maltsev '060 and Maltsev '560 teach training symbol processing circuitry for processing baseband signals wherein Maltsev '560 further teaches performing auto-correlation in order to detect OFDM packet (note paragraph 0028). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of auto correlation element 302 of Maltsev '560 in the short training symbol processing circuitry 106 in Fig.1 of Maltsev '060 for the purpose of performing auto-correlation in order to detect OFDM packet (note paragraph 0028).

Regarding claim 19, Maltsev '060 in view of Vanderperren teaches all subject matter claimed, as applied to claim 10 of performing periodic pattern detection on a short training sequence of the down converted baseband signal (as previously

explained), however, does not further teach performing an auto-correlation on a short training sequence of the down converted baseband signal.

Maltsev '560 teaches a short training symbol processing element (see Fig.3) performing a auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal (output of 306 by auto correlation); and when the normalized auto-correlation value compares favorably with an auto-correlation threshold, indicating that the down converted baseband signal is valid (output of 306 is compared with a threshold to determine correlations above the predetermined threshold, note paragraph 0028, hence are valid signals when above the threshold). Both Maltsev '060 and Maltsev '560 teach training symbol processing circuitry for processing baseband signals wherein Maltsev '560 further teaches performing auto-correlation in order to detect OFDM packet (note paragraph 0028). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of auto correlation element 302 of Maltsev '560 in the short training symbol processing circuitry 106 in Fig.1 of Maltsev '060 for the purpose of performing auto-correlation in order to detect OFDM packet (note paragraph 0028).

Regarding claim 21, the claim is rejected as applied to claim 11 with similar scope.

Regarding claim 29, the claim is rejected as applied to claim 19 with similar scope.

Allowable Subject Matter

7. Claims 12-18 and 22-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: present application discloses a receiver of performing a periodic training sequence detection of comparing with thresholds to determine presence of a valid signal. Prior art teaches all the limitations claimed. However, prior art does not explicitly teach the combined limitations of match filtering the down converted baseband signal, convolving the matched filtered signal, convolving the down converted baseband signal and comparing the squared absolute value of the result of the two convolving steps to produce its output, and further, does not explicitly teach wherein valid indication of the down converted baseband signal of both comparison of the normalized autocorrelation value with the autocorrelation threshold and the normalized detected periodic signal with the set of thresholds compares favorably.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn
Patent Examiner

9/7/07